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SUBJECT: Guangdong Moving to Expand Nuclear Power

¶1. (U) Summary: Guangdong province, the home of the Daya Bay and Ling Ao power stations, is getting set to rely even more on nuclear power as an energy source in the years ahead. The Yanjiang Nuclear Power Station (YNPS) 189 km south of Guangzhou, on which workers broke ground on December 16, is expected to supply 10% of Guangdong's overall demand for power by 2015. The new plant also represents progress on efforts to localize nuclear technology with 85 percent of the design and equipment originating in China. In addition, the project is expected to contribute US 14.7 billion to Guangdong's GDP and create thousands of unskilled jobs. End Summary.

Guangdong Breaks Ground on a New Nuclear Plant

¶2. (U) The new Yanjiang Nuclear Power Station, one of Guangdong's main projects under the 11th 5-Year Plan, will include six-1000 megawatt nuclear power reactor units. Guangdong's current nuclear power capacity totals less than 4000 megawatts at two sites -- the Daya Bay and Ling Ao Nuclear Power Stations. With majority investors China Guangdong Nuclear Power Holdings Company (CGNPC) at the helm, operation of reactor units 1 and 2 at YNPS is expected to begin by 2013, and will generate 45 billion kwh of electricity annually. The final two units should be operational by 2017.

Quenching Guangdong's Thirst for Power

¶3. (SBU) Quenching Guangdong's ever-increasing thirst for energy is challenging. Ding Zhenxing, Manager of CGNPC's Engineering Management Department, estimated that by 2015, Guangdong's power demand will reach 573 billion kwh annually; YNPS is expected to supply 10% of that demand. The addition of YNPS to Guangdong's nuclear cluster also represents a significant step in expanding the proportion of nuclear energy in Guangdong's energy mix. The provincial government hopes to expand the amount to 20% by 2020 with a total annual capacity of 24 million kilowatts (kw) and 10 million under construction. During a site visit, Party Secretary Wang Yang said that the new plant had the potential to contribute effectively to solving the power shortage problem in Guangdong, to changing the province's energy structure, and to strengthening Guangdong's efforts at environmental protection.

¶4. (U) In addition to the Yanjiang project, Guangdong is planning the expansion or construction of several nuclear power facilities along its coastline. In Taishan, six units will be constructed, the first two of which will be 2-1700 megawatt Areva EPR units, with an expected delivery date of 2013. Phase II of Ling Ao, 2-1080 megawatt CPR-1000 units, is expected to be delivered in 2010. Construction of the Lufeng/Shanwei/Tianwai facility is still pending NDRC approval. Of China's overall net nuclear power generating capacity of 8.6 million kilowatts, Guangdong contributes 4 million kilowatts through the operations of Daya Bay and Ling Ao (Phase I).

Home Grown, Home Owned - 85% Localization

¶5. (SBU) The YNPS project attests to China's growing desire to become self-sufficient in the design and operation of nuclear facilities. CGNPC's Ding emphasized that YNPS is 85% localized, meaning 85% of the station's design and equipment is sourced domestically in China. Among new nuclear projects nationwide, the national average is 83%. Local innovation and design are priorities for nuclear projects in China's Nuclear Power Development Plan (2005-2020). YNPS has adopted domestically produced CPR-1000 pressurized water reactors for units 1-3. CPR-1000 technology is also being used in Phase II of Guangdong's Lingao Nuclear Power Station. Ding said units 3-6 would use CPR-1000+ technology. (Note: CPR-1000 technology is based on French-owned Areva designs. Media reports indicate that China expects to employ CPR-1000 technology in at least forty domestic nuclear generators in the near future. End note.) The remaining 15% of the station's manufactured parts, project design, and technical assistance is provided by foreign companies, including Siemens.

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Benefiting Guangdong's Economy and Environment

¶6. (U) The provincial government has welcomed the project for its anticipated contribution to Guangdong's economic growth in the face of the global economic downturn. YNPS will contribute RMB 100 billion (USD 14.7 billion) to the province's GDP and create thousands of unskilled jobs for area residents, according to media reports.

¶7. (SBU) Investment in the project totals RMB 70 billion (USD 10.1 billion), mostly funded by CGNPC. According to Ding Zhenxing, much of the invested capital is revenue from CGNPC-owned Daya Bay, Guangdong's first nuclear power plant. According to media reports, YNPS is currently the most cost-efficient nuclear project under construction in China, with a unit cost of RMB 10,070 (USD 1,480) per kilowatt (kw). Once completed, YNPS's on grid price will be an estimated RMB 0.364 per kwh, far below fossil fuel power prices. General Manager Ding told us that CGNPC expects to see a return on its initial investment in fifteen years.

¶8. (SBU) Ding also said that the plant is taking steps to ensure energy-efficient practices. The first is the implementation of an 18-month refueling cycle, instead of the standard 4 months. YNPS will adopt highly efficient transformers and will use half-speed steam generator units (SG), the heat exchanger in a pressurized water reactor, to heighten energy efficiency. In addition, technology design will incorporate measures to prevent heat and energy loss, and green lighting will be used throughout the facility. Ding also told us that once the plant is at full operating capacity, its emissions will be watched closely to ensure that current environmental standards are met.

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